

WHAT IS CLAIMED IS:

1. A method for depleting double negative T cells in a subject, said method comprising:
 - (a) identifying a subject as having, or at risk of having, an autoimmune disease, a lymphoproliferative disease, or an allergy; and
 - (b) administering to said subject an effective amount of a 4-1BB agonist.
2. The method of claim 1, wherein said subject is a human.
3. The method of claim 1, further comprising depleting autoreactive B cells in said subject, wherein said 4-1BB agonist is effective to deplete said autoreactive B cells.
4. The method of claim 1, wherein said 4-1BB agonist is an antibody that binds to 4-1BB.
5. The method of claim 4, wherein said antibody is a monoclonal antibody.
6. The method of claim 4, wherein said antibody is 2A.
7. The method of claim 1, further comprising administering interferon-K to said subject.
8. The method of claim 1, further comprising administering a Gr-1-binding agent to said subject.
9. The method of claim 8, wherein said Gr-1-binding agent is an antibody that binds to Gr-1.
10. The method of claim 1, wherein said autoimmune disease or said lymphoproliferative disease is systemic lupus erythematosus.
11. The method of claim 1, wherein said autoimmune disease is insulin-dependent diabetes mellitus.
12. The method of claim 1, wherein said autoimmune disease or said lymphoproliferative disease is selected from the group consisting of an inflammatory bowel disease, a celiac disease, an autoimmune thyroid disease, Sjogren's Syndrome, autoimmune gastritis, pernicious anemia, autoimmune hepatitis, cutaneous autoimmune diseases, autoimmune

dilated cardiomyopathy, myocarditis, myasthenia gravis, vasculitis, autoimmune diseases of the muscle, autoimmune diseases of the testis, autoimmune diseases of the ovary, and autoimmune diseases of the eye.

13. The method of claim 1, wherein said allergy is to pollen antigens, fungal antigens, insect antigens, bacterial antigens, mammalian antigens, or insect venom antigens.
14. The method of claim 1, wherein said 4-1BB-binding agent is 4-1BB ligand or a fragment thereof.
15. The method of claim 1, wherein said administering comprises delivering to said subject a nucleic acid comprising a polynucleotide encoding said 4-1BB agonist, wherein said polynucleotide is operably linked to a transcriptional regulatory element.
16. The method of claim 1, wherein said administering comprises:
 - (i) providing a cell from said subject;
 - (ii) transfecting or transducing said cell, or a progeny of said cell, with a nucleic acid comprising a polynucleotide encoding said 4-1BB-agonist, wherein said polynucleotide is operably linked to a transcriptional regulatory element; and
 - (iii) administering said transfected or transduced cell, or a progeny of said transfected or transduced cell, to said subject.
17. The method of claim 1, further comprising:
 - (c) monitoring said subject for symptoms of said autoimmune disease, lymphoproliferative disease, or allergy.
18. A method for inducing death of a double negative T cell, said method comprising contacting said double negative T cell with an effective amount of a 4-1BB agonist.
19. The method of claim 18, wherein said 4-1BB agonist is an antibody that binds to 4-1BB.
20. The method of claim 19, wherein said antibody is a monoclonal antibody.
21. The method of claim 19, wherein said antibody is 2A.

22. The method of claim 18, wherein said 4-1BB agonist is 4-1BB ligand or a fragment thereof.
23. The method of claim 18, further comprising inducing death of an autoreactive B cell, wherein said autoreactive B cell is contacted with said effective amount of said 4-1BB agonist.
24. The method of claim 18, wherein said double negative T cell is in vitro.
25. The method of claim 18, wherein said double negative T cell is in a subject.
26. The method of claim 25, wherein said subject is a human.
27. The method of claim 25, wherein said subject has or is at risk for having an autoimmune disease, a lymphoproliferative disease, or an allergy.
28. The method of claim 27, wherein said autoimmune disease or said lymphoproliferative disease is systemic lupus erythematosus.
29. The method of claim 27, wherein said autoimmune disease is insulin-dependent diabetes mellitus.
30. The method of claim 27, wherein said autoimmune disease or said lymphoproliferative disease is selected from the group consisting of an inflammatory bowel disease, a celiac disease, an autoimmune thyroid disease, Sjogren's Syndrome, autoimmune gastritis, pernicious anemia, autoimmune hepatitis, cutaneous autoimmune diseases, autoimmune dilated cardiomyopathy, myocarditis, myasthenia gravis, vasculitis, autoimmune diseases of the muscle, autoimmune diseases of the testis, autoimmune diseases of the ovary, and autoimmune diseases of the eye.
31. The method of claim 27, wherein said allergy is to pollen antigens, fungal antigens, insect antigens, bacterial allergens, mammalian antigens, or insect venom antigens.
32. The method of claim 25, wherein said contacting comprises administering to said subject said 4-1BB agonist.

33. The method of claim 25, wherein said contacting comprises administering to said subject a nucleic acid comprising a polynucleotide encoding said 4-1BB agonist, wherein said polynucleotide is operably linked to a transcriptional regulatory element.

34. The method of claim 25, wherein said contacting comprises:

- (a) providing a cell from said subject;
- (b) transfecting or transducing said cell, or a progeny cell of the cell, with a nucleic acid comprising a polynucleotide encoding said 4-1BB agonist, wherein said polynucleotide is operably linked to a transcriptional regulatory element; and
- (c) administering said transfected or transduced cell, or a progeny of said transfected or transduced cell, to said subject.